

Control Number 10/712,949 (filed 11/13/2003)
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the Application:

Listing of the Claims

5 Pending Claims

1 - 20 (canceled)

21. (currently amended): A process for the production of refinery transportation fuel or blending components for refinery transportation fuel, which process comprises:

10 providing an organic feedstock consisting essentially of material boiling between about 75° C. and about 425° C. comprising a mixture of sulfur-containing, nitrogen-containing and other organic compounds derived from natural petroleum by processes that include reacting a petroleum distillate consisting essentially of
15 material boiling between about 50° C. and about 425° C. with a source of hydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst to assist by hydrogenation removal of sulfur and/or nitrogen from the petroleum distillate;

20 partitioning by distillation the organic feedstock to provide at least one low-boiling organic part consisting of a sulfur-lean, mono-aromatic-rich fraction having a sulfur level of no more than 25 ppm, and a high-boiling organic part consisting of a sulfur-rich, mono-aromatic-lean fraction;

25 contacting a gaseous source of dioxygen with at least a portion of the low-boiling organic part in a liquid reaction medium containing a particulate, heterogeneous oxygenation catalyst system which exhibits a capability to enhance the incorporation of oxygen into a mixture of liquid organic compounds and comprises one or more catalyst metal selected from the group consisting of

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~~vanadium, chromium, molybdenum, tungsten, bismuth, manganese,~~
~~iron, cobalt, nickel, palladium, and platinum, copper and silver,~~
while maintaining the reaction medium substantially free of
halogen and/or halogen-containing compounds, to form a liquid
5 mixture comprising hydrocarbons, oxygenated organic compounds,
water of reaction, and acidic co-products such that the oxygenation
of the hydrocarbon portion of the liquid mixture is more than 1
percent by weight ;

separating from the mixture at least a first organic liquid of
10 low density comprising hydrocarbons, oxygenated sulfur-
containing, oxygenated nitrogen-containing and other oxygenated
organic compounds and acidic co-products and at least portions of
the catalyst metal, water of reaction and acidic co-products, and a
second separated liquid which is an aqueous solution containing at
15 least a portion of the oxidized sulfur-containing and/or nitrogen-
containing organic compounds; and

~~contacting all or a portion of the separated organic liquid with~~
~~a neutralizing agent thereby recovering a low-boiling oxygenated~~
~~product having a low content of nitrogen, acidic co-products and a~~
20 sulfur content of no more than 15 ppm .

22. (previously presented): The process according to
claim 21 wherein the hydrogenation catalyst comprises at least one
active metal, selected from the group consisting of the *d*-transition
elements in the Periodic Table, each incorporated onto an inert
25 support in an amount of from about 0.1 percent to about 20 percent
by weight of the total catalyst.

23. (previously presented): The process according to
claim 21 which further comprises recovering at least a portion of
the heterogeneous oxygenation catalyst system and injecting all or
30 a portion of the recovered catalyst system into the liquid reaction
medium.

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24. (previously presented): The process according to claim 21 wherein the oxidizing agent comprises a gaseous source of dioxygen, the active catalyst metal of the oxygenation catalyst system is employed as metal oxide, mixed metal oxide, and/or basic salts of the metal or mixed metal oxide.

25 (previously presented): The process according to claim 21 wherein the heterogeneous oxygenation catalyst system comprises an oxygenation catalyst containing from about 1 percent to about 30 percent chromium as oxide and from about 0.1 percent to about 5 percent platinum on a support comprising gamma alumina.

26. (previously presented): The process according to claim 21 wherein the heterogeneous oxygenation catalyst system comprises chromium molybdate or bismuth molybdate and optionally magnesium.

27. (previously presented): The process according to claim 21 wherein the heterogeneous oxygenation catalyst system comprises gamma alumina and a catalyst represented by the formula $\text{Na}_2\text{Cr}_2\text{O}_7$ in an amount of from about 0.1 percent to about 1.5 percent of the total catalyst system.

28. (currently amended): The process according to claim 21 further comprising blending at least a portion of the low-boiling oxygenated product with at least a portion of the high-boiling product to obtain components that exhibit sulfur levels of less than about 15 ppm, for refinery blending of ultra-low sulfur transportation fuel.

29 & 30 (canceled)